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AUTHOR Murray-Branch, Jamie; Bailey, Brent R.; Poff, Lisa E., Ed.
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ABSTRACT

Designed for teaching the related services staff, residential care providers, and families of individuals with severe hearing and vision impairments, this booklet explains the issues related to develcping a communication system using textures. The texture symbols described are intended for use by individuals with dual sensory and multiple disabilities. The first section of the guide includes an overview of the sense of touch and the use of textures. It also provides guidelines for who should use textured symbols. The next section provides guidelines for choosing materials and activities. In addition, there is information on making textured symbols and display formats. The four phases of instruction are then outlined, including: (1) creating an association between a textured symbol and a referent; (2) teaching a requesting behavior; (3) practicing textured symbol use within functional activities; and (4) generalizing textured symbol use. Appendices include a list of the seven levels of communication, suggested textured materials, a list of textured making tools and materials, and an illustration of display formats. (CR)

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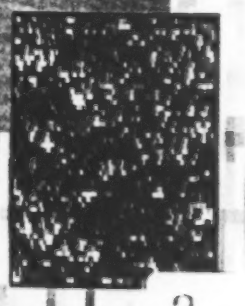
Textures as Communication Symbols

Jamie Murray-Branch, M.A., CCC-SLP.
University of Wisconsin-Madison

and

Brent R. Bailey, Ph.D.
Indiana Deafblind Services
Project Consultant



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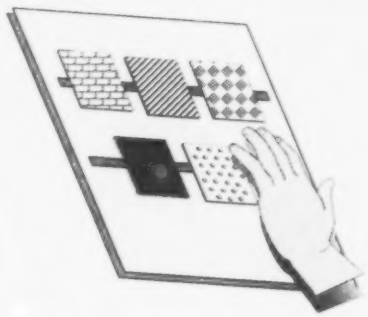

Jamie Murray-Branch, M.A., CCC-SLP.
University of Wisconsin-Madison, Wisconsin

&

Brent R. Bailey, Ph.D.
Madison, Wisconsin

Edited by:
Lisa E. Poff, B.S., J.D.
Indiana Deafblind Services Project

Blumberg Center for Interdisciplinary
Studies in Special Education

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About this Guidebook

Textures as Communication Symbols is designed to explain the issues related to developing a communication system using textures. The textured symbols described are intended for use by individuals with dual sensory and multiple disabilities. Using distinctive textures, each of which represents a different item, activity, or object, is a way to create a portable communication system which does not require complex materials, expensive equipment or highly specialized training.

This booklet was developed for use by teaching and related services staff, residential care providers and families of individuals with severe hearing and vision impairments. The guide is organized as follows:

- **Introduction to Textures as Communication Symbols**
  This section includes an overview of the sense of touch and the use of textures. It also provides guidelines for who should use textured symbols.

- **Development of a System of Textured Symbols**
  In this section, the reader will find guidelines for choosing materials and activities. In addition, there is information on making textured symbols and display formats.

- **Four Phases of Instruction**
  This section outlines the four phases of instruction. It includes the goals to be accomplished in each phase and a description of the specific steps.

- **Appendices**
  Appendices have been included to provide the reader with information on suggested materials and examples.

Introduction to Textures as Communication Symbols

Background

People with multiple disabilities, including severe sensory impairments, present a continuing challenge in the area of communication. Finding effective ways to help these individuals interact with others is important to their overall quality of life.

Traditionally, the literature describes seven levels of communication moving from nonsymbolic, preintentional communicative behaviors to formal language (see Appendix A). Different forms of communication can be found at all points along the continuum and individuals may use methods on one or more levels. For example, crying and facial expressions are at the preintentional level, using

miniatures and objects are in the concrete symbolic communication stage, and Blissymbols and manual signs are in the abstract symbolic communication category. One individual who is deafblind may use only vocalizations and facial expressions, while another may use both of those, as well as objects and sign.

This book is designed to explain a communication technique using textures. Textured symbol use is in the concrete stage of the seven levels of communication. The textured symbols described are intended for use by individuals with dual sensory and multiple disabilities. Using distinctive textures, each of which represents a different item, activity, or object, is a way to create a portable communication system for choice-making and requesting. The textured symbols are recognized through the sense of touch.

Textures and Touch

People with hearing and vision impairments have varying amounts of usable vision and hearing. However, one common factor for these persons is that the sense of touch usually is an important way to get information. Textures are a way to use the sense of touch to create a communication system. Distinctive textures can be used as symbols, each representing a different choice of activities or objects. In addition, textured symbols are less complex than other alternative communication techniques that rely on the sense of touch (e.g., braille).

In using textured symbols as a communication tool, understanding the sense of touch and how to use textures is critical. The following sections are designed to explain these important topics.

Touching-Being Touched: What's the Difference?

The sense of touch involves two distinct aspects. The first is the passive stimulation of the skin (tactual perception). For example, tactual perception would include the sensation a person has when his or her skin comes into contact with any surface. The second aspect is the ability to actively explore or feel something with one's hands (haptic perception). For example, haptic perception would include the sensations a person has when he or she examines an object. Most touching for the purpose of information gathering and communication is haptic in nature.

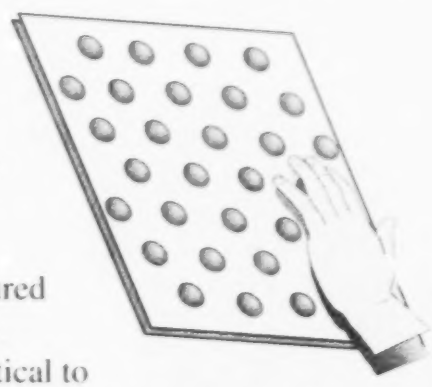
Although touching for communication purposes is typically haptic or active, simple tactual contact may be sufficient to gather textural features. For example, the sandpaper roughness or the pattern of corduroy can be identified with little or no movement. Thus, mere contact may allow a person to discriminate between various textures. Since the different

textures can be distinguished quickly and easily by touching them to the skin, the skill of active exploration does not have to be present to introduce a textured symbol.

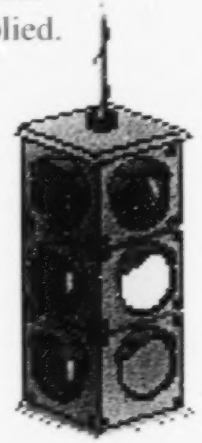
What Makes Textures Work as Communication Symbols?

Textures work as communication symbols for several different reasons. First and most importantly, many textures are easily recognized through simple contact with the skin. Second, a texture paired with an activity or object remains the same symbol, even if its size is reduced to be made more portable. Third, the use of textures often stimulates more intentional or active touching on the part of the person trying to communicate. Fourth, there are reduced learning and memory demands on an individual using textures when compared to recognizing objects or braille through touch.

The ease of recognition of a texture is due to "saliency." Saliency is defined as the combination of features which stand out, producing a prominent or distinctive quality. For example, the ridges and grooves of corduroy are distinctive features that make it salient. This quality allows more instant recognition when contact is made with the skin surface. Because textures have saliency, they are uniform across the surface area and allow touching from any angle. In other words, the texture can be presented upside down and still "feel" the same. Tactual saliency is the primary determiner when selecting textured patterns or materials to become textured symbols. It also is critical to consider how dissimilar each texture is from any other texture to be used in a vocabulary set.



Associating textures with an activity or object is easily accomplished by repeatedly pairing the presence of a favorite item to a specific texture. When an individual feels rough sandpaper and consistently receives french fries, a concrete relationship is established. As in any association made over time, once it is established it exists. The process is similar to assigning meaning to different colors. No previous relationship need exist and no logic need be applied. This is, in fact, the case with traffic lights at intersections. When a driver sees the color red--she stops. When she sees the color green--she goes. The recognition of color is instantaneous and the behavior is automatic. The same holds true with textures. Because they are instantly recognizable through touch, the practiced association will be reflexive over time. The person feels rough sandpaper and immediately thinks of french fries. No previous relationship need exist and no logic need apply.



Eventually, using textures requires some form of intentional action on the part of the person in order to initiate making a choice or requesting an item or activity. In other words, the hope is that a person will be able to review several textured symbols, one at a time, decide on one to request with, and then present the selected symbol to another person. Developing these active touching behaviors is done by using shaping techniques. An initial texture is introduced as a rather large surface area (e.g., an 8" x 10" card). This is because the person will be experiencing the texture without being prompted by another person. When an individual accidently touches the texture he or she is immediately rewarded with the associated item.

Relying on accidental contact in the initial phase of instruction helps establish spontaneity and reinforces active

touching. Since no instructional cues are used, the individual gains more physical control of the situation by learning to search. Searching is further shaped by reducing the size and changing the placement of the texture. This encourages more active, intentional touching (e.g., haptic behaviors), as well as refines the person's touch sensitivity while continuing to avoid learned helplessness and/or cue dependency.

Finally, because textured symbols are recognized automatically, there is a reduced demand on cognitive processing and memory recall. The person does not have to compare and contrast the details of the symbol display to identify the symbol. The person also does not have to remember what the symbol represents. Recognition of a textured symbol is inherent to the sensation it produces when it comes in contact with the skin, while its meaning is recalled instantly by the association created by numerous, consistent pairings to a particular item or activity. The absence of a need to "think about" the symbol/referent relationship reduces overall learning and memory demands.

Therefore, a textured symbol is permanent, tactually unique and instantly recognized when in contact with the skin surface or when touched. It has a recognized meaning through the act of pairing and its use requires some action or actions on the part of the person. These actions are shaped into expressive communication behaviors. Unlike more formal symbol systems, textured symbols do not represent a single vocabulary word for all persons. No formalized system has been established and the same texture can be used to represent different things to different people. The decision to use a particular texture, or assign a particular referent, rests on an individual's personal preferences. All of these factors contribute to the success of textures as communication symbols for individuals with deafblindness and/or multiple disabilities.

Who should use Textured Symbols?

The first step is to note that textured symbols are intended to improve social outcomes for persons who have had limited success with other communication modes. A person with severe disablities, including vision and hearing loss, may be a good candidate for a system of textured symbols when the goal for this individual is to increase: a) participation in functional activities; b) opportunities in the community; c) communication with a variety of partners; and, d) choice making.

The second step is to determine where to start. If the individual is using another mode, it is important to determine which part or parts are effective. Many times persons with deafblindness and/or multiple disabilities use nonsymbolic means of communication (e.g., gestures or vocalizations). Then one must look at whether textured symbols will help further the communication opportunities and abilities of the individual. If textured symbols will improve the person's communication skills, they would then supplement the mode(s) already in use, not replace them.

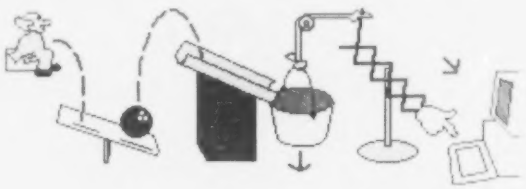
Development of a System of Textured Symbols

Identifying Meaningful Textured Symbols and Display Formats

Choosing Activities or Objects

In choosing activities or objects the two main considerations are: a) the personal preferences of the individual; and, b) the ability to provide the object or complete

the activity after it has been chosen. An activity or object is only motivating for an individual when it is a favored one. Motivation is critical in promoting the individual's active participation and interest. It is also just as important to be certain that the preferred object or activity is available to the individual once it has been selected. The textured symbol is meaningless if the item it represents is inaccessible or if the symbol is not honored by the person accepting it. The individual making the choice must believe in the power of the symbol to "cause" what it represents to appear or happen.



Choosing Texture Materials

Four things must be considered when selecting which textures will be used as textured symbols: 1) saliency, 2) the tactile preferences of the individual, 3) the option to reduce the size of the textures to make them more portable, and 4) the dissimilarity of sensations produced by various textures when grouped together as a symbol set. First, textures must be distinctive or salient. A texture is considered salient if its unique pattern is instantly recognized and clearly distinguishable through the sense of touch. For example, sandpaper and short cropped soft fur are both unique in the sensations they produce and are immediately recognized when touched to the skin.

Second, the individual's tactile preferences should be considered when choosing textures. A texture experienced as an unpleasant sensation by an individual would be a poor choice to include as a symbol, since it may be refused or avoided even if it represents a preferred item. For example, many individuals dislike the feel of sandpaper and would

prefer not to touch that type of surface. If sandpaper was made a textured symbol, the individual might never learn the association to the object or activity it represents. This could defeat efforts to teach the use of other textured symbols as well. Therefore, it is important to identify which textures an individual may prefer when selecting textures for symbols.

The third consideration is the future portability of the texture, based on its size as a symbol. This simply means that care must be taken to choose textures which may be reduced in size and still retain their saliency and surface uniformity. For example, a texture which must be a one foot square to be distinct and uniform across its surface area would be a poor choice if the end goal was to reduce the texture size to a one inch square so that it can be carried in a wallet display format.

Finally, textures must be considered as a group. Any given texture will be clearly distinguishable from certain other textures and more similar to others. Examining each texture in relationship to every other texture will help prevent selecting two textures that produce like sensations. For example, short cropped soft fur could be a good texture to use; however, it probably would not work to use the fur AND a cotton ball in the same set of textures for an individual. There is not enough distinctiveness or saliency between the two textures.

When these four concerns are addressed in choosing textures for an individual to use, it is more likely that use of the textured symbols will be successful. A list of suggested materials to consider for textured symbols, as well as some examples of symbols, can be found in Appendix B.

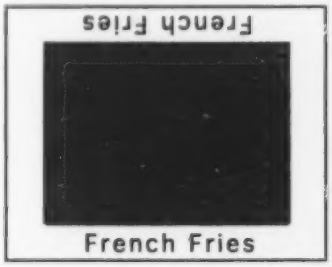
Making Textured Symbols

Making textured symbols is simple and uses inexpensive supplies. Velcro, heavy cardboard, glue, and some type of

lettering are all that is necessary to create the symbols out of various textured materials. Additional tools and any other materials needed will depend upon what textures are chosen. A list of tools and materials used in making textured symbols can be found in Appendix C.

After choosing a texture, the first step is to make it rigid. This could be done by cutting a piece of cardboard/poster board to the appropriate size and attaching the texture to it. In the initial phases of instruction the size of the first texture should be large (e.g., at least one foot square). The first texture also may be made in a number of different sizes, or the original cut smaller, as the individual goes through the instructional phases. The final size may be as little as one or two inches square. This size will depend upon the individual using the textured symbol and whether the person has difficulty recognizing or manipulating the smaller version.

Attaching the texture to the poster board may involve glueing the item to the board or simply making a pattern using puff paint or "Elmer's" glue on the poster board and letting it dry. In the second step, the object or activity which is represented by the texture should be printed on the textured symbol. This will ensure that an accurate message is conveyed between the individual and other community members as to what the texture represents.



When subsequent textures are introduced, the size may or may not need to start off large. If new textures need to be introduced in a larger size, they eventually should be reduced to match the final size of the first textured symbol.

Once the size of the textured symbol has been reduced, a final step would be to introduce a display format. Velcro

should be attached to the back of the symbol and to the display board. The individual then learns to remove the textured symbol from the display board and use it as a means of making a request. When using a display board, the individual pulls the textured symbol off the velcro strip and hands it to a communication partner. The textured symbol is exchanged for what it represents and is then replaced by the partner for possible selection again.

New textured symbols may be transferred quickly to the display board. In the end, as many as three to six different, but familiar, texture/referent associations may be presented on the display at one time, to allow a choice between items.

Display boards also may start out large in size and be reduced during the phases of instruction. The goal is portability for use in the community. Some display boards may even fit inside checkbook size wallets. This allows the individual to carry it in a pocket, backback, or purse while in the community. Different display formats may need to be tried in order to determine which one will best meet the needs of the individual. Examples of display formats are included in Appendix D.

Four Phases of Instruction

For individuals with severe hearing and vision impairments, instruction that emphasizes spontaneous use of the communication symbols from the beginning of training, as well as avoids irrelevant tactile stimulation is critical. Using this approach with textured symbols helps promote student initiated behaviors while avoiding problems related to prompt dependence. When moving through the four phases of instruction, it is important to keep these points in mind.

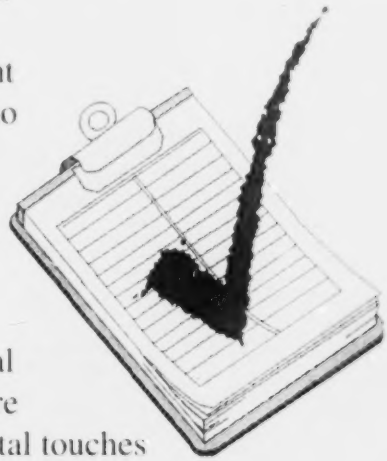
Phase 1

***Instructional Goal 1 - Creating An Association**: To create an association between a textured symbol and a referent (i.e., a preferred object or activity).*

Teaching a person to obtain a referent (e.g., a favorite beverage such as orange juice) by touching a particular texture should begin in a setting which is simple and distraction free. Because no instructional cues or prompts are used to get the person to touch the texture, the initial texture area is large (e.g., 8" x 10" card). In addition, the texture is placed on a table where the individual will easily come into contact with it while seated at the table. Although the teacher will not direct the person's attention to the texture, the probability that contact eventually will be made is increased by the large size of the texture and its placement in a location where the person is likely to explore.

Two behaviors are involved with learning to use the texture to get the preferred item: accidental and deliberate touches of the texture. An "accidental touch" occurs when a person's hand or fingers come in contact with the texture by chance--or without any searching movement. A "deliberate touch" involves the person's hand or fingers actively searching for the texture and making intentional contact with it. When an individual touches the texture, whether accidental or deliberate, he or she is immediately rewarded with the associated item (e.g., a small amount of orange juice in a cup). Relying on accidental touching, rather than prompting, in the initial phase of instruction helps establish spontaneity and intentionality.

In order to determine if the first instructional goal is met, it is important to take data that indicates whether the person is deliberately touching the texture to get the preferred object or activity. The criteria used is the difference in the number of accidental versus deliberate touches. Initially, the person does not know an association exists between the texture and the referent. Therefore, accidental and deliberate touching will occur in similar numbers. Once the association is established, deliberate touching of the texture is increased and accidental touching is much less likely to occur.



A way to measure progress might involve setting aside at least two, 3 to 5 minute periods where the texture is available and the teacher waits without being involved with the person. If the person touches the texture, the teacher provides the referent and the number of accidental and deliberate touches per session are recorded. As the number of accidental touches declines and the number of deliberate touches rises, the individual's understanding of the behavior of touching the texture and its relationship to getting the referent is beginning to develop. While an association between the textured symbol and referent now exists, it can only be assumed that the person is using the act of touching to "signal" that the referent is wanted. It is important to recognize the difference between using the textured symbol as a signaling device and understanding it as a label that the person knows represents a specific and unique item or activity. However, when the person consistently uses a deliberate touch (to either "signal" or "label" the associated referent), the first goal of Phase I is accomplished.

***Instructional Goal 2 - Shaping Search Behaviors**: To shape searching and locating of the textured symbol when it is moved around and reduced in size.*

When creating an association between a texture and a preferred activity or object (as explained in Instructional Goal 1 for Phase I), the large surface area promotes incidental touching of the texture. Once a deliberate touch has been established, the texture/referent relationship is used to shape an active searching behavior. This is accomplished in two ways. First, the large texture surface should be moved to different locations on the table in front of the individual. If an association has been made between the texture and the referent, the individual will begin to search for the texture even if it is placed in a different location each time. The first few times that the texture is moved, it should be placed in a location which is close enough to the individual that any type of movement towards the texture will result in contact and reinforcement. Second, once this initial searching behavior is observed, the texture can then be reduced in size to promote more active searching. It is important to continue changing the location of the smaller size texture during this phase.

The active searching, which is the focus of this instructional goal, is important for several reasons. First, searching involves movement which improves a person's ability to identify textured patterns. A person's sense of touch is refined through practice. When searching, each effort to locate the desired texture requires the person to discriminate the texture from the table surface. This contrast develops an individual's ability to identify differences when touching various surface areas. This ability is further developed when additional texture/referent associations are introduced later. Additionally, the skills learned by using purposeful searching movements increase the likelihood that a person may be better able to identify more complex tactile symbols.

Second, the large, original texture area can be replaced by a smaller texture size because the more active searching/touching movement makes identification easier. This is critical to reducing the overall size of the textures so they may be used as a portable symbol system. The texture is usually reduced to some smaller size (e.g., 3" x 5") to facilitate teaching the next behavior of requesting. Eventually the size is reduced to some fixed area (e.g., 2" X 2").

Third, once spontaneous searching is established, the individual is more likely to reach out and explore other things in different settings. Learning is enhanced by these types of investigative experiences.

Finally, the ability to use active searching is necessary to learning scanning behavior. Once a person has learned several different texture/referent pairings, the opportunity to make a choice becomes possible. However, selecting one alternative from several options requires that the person be aware of all the possibilities. This means the person must learn to "look at" all the choices by touching each in succession and then returning to "pick" the one preferred. Without the ability to scan a set of choice options the person will be unable to make a spontaneous selection. Active searching can be shaped into the ability to scan alternatives and make spontaneous choices.

Phase II

Instructional Goal 1 - Teaching A Requesting Behavior:
To teach the individual to present (i.e., search for, pick up, & hand over to another person) the textured symbol as a request for the associated object or activity.

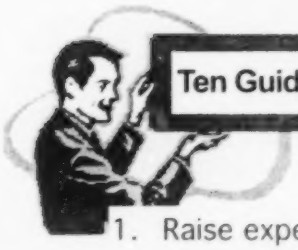
During Phase I, the individual learned to associate a texture

with a particular object or activity and then to use touch to search for the texture in a variety of locations and sizes. In Phase II, the individual will continue to search for the texture, as well as learn to pick it up and hold it out until it is taken by another person and exchanged for the activity or item represented. This type of motion represents turn taking in a communicative exchange, as well as being a way to make an actual request for an item or activity.

When teaching this requesting behavior, it is important to remember that different people may need different levels of support. Although no physical prompts were used in Phase I, some assistance may be needed to get the person to pick up and extend the texture. This can be done in a number of ways and should be adapted to each individual. For example, once the individual finds and touches the texture, the teacher slips his or her hand under the texture, supporting it in the individual's hand, and helps them to extend the texture toward the teacher as the communication partner. By supporting the texture in the individual's hand, the textured surface remains in contact with the person's skin as he or she extends it outward. This helps reinforce the association between the texture and the requested item.

When teaching an individual to extend the textured symbol as a request, remember the effects of prompting and touching. In Phase I, the individual learned to use textures to request items or activities without assistance or physical prompting. If physical cues are required to teach requesting by extending the texture, try to provide the intervention with as little touching of the person's hands or skin as possible. When hand over hand assistance is necessary, then fade (e.g., support to the wrist, then a slight push to the elbow, etc.) as soon as possible. Attempt to manipulate materials whenever possible. Once the person can pick up and extend the textured symbol without prompts, the person is ready to try requesting the preferred item across various settings and people (see Phase III).

For persons who have vision and hearing impairments with multiple disabilities, it may be important to adapt the textured symbol and how it is presented to the individual. For some individuals it will be easier to pick up the texture if it is larger and for others, if it is smaller. Some individuals may need the texture tilted slightly so they can get their fingertips under the edge. Other individuals may require the textured symbol surface to be thicker or v-shaped rather than a flat surface. Finally, some individuals may be physically unable to pick up the symbol or extend it outward. Thus, requesting a preference with a texture may have to continue to be acknowledged by the person simply touching the texture.



Ten Guidelines to Shaping Requesting Behavior

1. Raise expectations in steps small enough that the person has a realistic chance of receiving the reinforcement. For example, when teaching searching behavior, move the texture around in a circular fashion, enlarging the circumference of the area to be searched; or, shrink an 8" x 11" presentation by trimming off 1/2" from alternating sides every third or fourth day.

2. Shape only one thing at a time; trying to shape searching for the texture, picking it up and presenting it to another person all at one time could be confusing to the person.

3. When introducing a new skill, temporarily relax expectations for past ones. Learning to pick up and present the textured symbol may take additional concentration, so make searching for the symbol easy and successful to avoid frustrating the person.

4. Stay ahead of the person's learning. Plan out shaping strategies in advance so you are ready if the person makes sudden progress. For example, know where else the person will practice requesting french fries once pick up and presentation has been accomplished. Will it be at McDonalds or Grandma's house? Who will be the first new communication partner and has that person been trained? What additional items or activities will be added as new vocabulary?

5. Don't have too many teachers when introducing new behaviors. Shaping requires consistent and predicable responses from the teacher. Everyone interacts differently and too many idiosyncratic teaching styles can result in inconsistent responses.

6. If shaping procedures do not result in progress, change something. Adapt the shape, size or feel of the presentation; replace the referent with a more desireable motivator; try a different teacher; or, increase the number of practice sessions while reducing their length. Keep adjusting the development of the system to meet the person's needs.

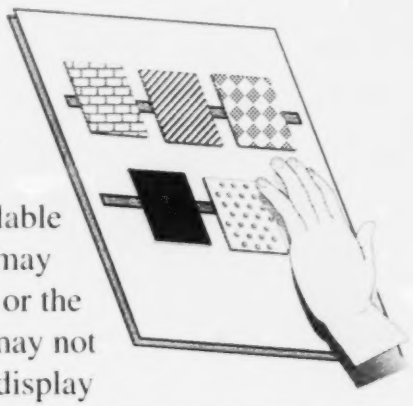
7. Don't stop teaching sessions unexpectedly; taking away the opportunity to obtain the preferred item or activity for no apparent reason can seem like punishment. Make uninterrupted practice periods part of the plan. Don't try to interact with other persons, complete other tasks, or respond to unexpected situations. Focus your attention on reacting quickly and consistently to the person's requests. Shaping takes deliberate concentration.

8. If a problem develops and the person regresses, start over from the beginning. Progress through each step quickly but include everything and reinforce everything as a way to review the whole procedure. It is normal to hit plateaus, have set backs, or simply lose concentration when learning to communicate. Expect that the person will need to be supported through the rough spots.

9. Always honor the person's communicative efforts. Requesting will be watered down if a choice is ignored or rejected. For example, having a symbol for swimming available for selection, but then telling the person "Later," is not fair, honest or respectful. Be sure that selections are available and that choice-making is done in a predictable and clear manner.

10. Finish teaching sessions on a positive note. Whenever possible, end when there has been success. Communication is about control. Feeling empowered comes from getting what is desired when it is wanted or needed. People learn to communicate more effectively when they experience success.

Instructional Goal 2 - Introducing A Presentation Display:
To introduce a display format similar to what the person will use to make choices when several textured symbols are presented as an array.



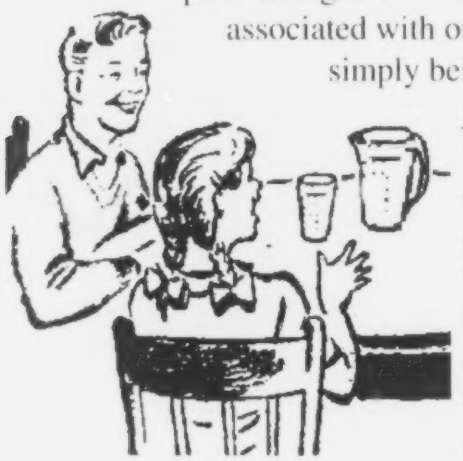
At some point a fixed display format needs to be introduced. The display area, whether in a book, on a board, or attached to a wallet, acts as a common area for examining available choices. Since different choices may only be available at certain times or the opportunity to make any choice may not be possible at specific times, the display is used to inform the person what can be selected at any given moment. The person examines the display format area, whether it's 8 1/2" X 11" or 6" X 3," to see what's available. If the display is empty, the person knows that choices aren't an option at this time. In addition, the end of a choice-making session can be indicated by simply removing the symbols from the display. The display helps put boundaries on the area the person is expected to look for any textured symbols. Since the original experience of touching the texture occurred on a table surface, the display helps establish the scanning area that is portable.

Placing the textured symbols on a display format may require additional adaptation. For example, a person may need the edge of the symbols raised at one end for easy grasping while another individual, with a wheelchair laptray, may require a display with suction cups to hold it in place. And a third person may need a large display because their textured symbols had to remain large in size for purposes of easier identification.

Phase III

Instructional Goal 1 - Practicing Textured Symbol Use Within Functional Activities: *To teach the individual to present the textured symbol within the context of functional activities across a typical daily routine.*

After a requesting behavior has been established, the use of one or more textures should be expanded to actual functional activities. All other components of the previous phases (i.e., tactual searching, pick-up, extension, exchange of textured symbol for its corresponding referent) should remain identical to what has already been accomplished. If the person is still relying on instructional assistance (i.e., physical prompting and cuing) to pick up and present the texture, fading and/or adaptation of the textured symbol may still be in a process of evolving. However, the use of the texture should now be expanded to appropriate functional activities to promote texture use in more natural circumstances. For example, a person might now select the texture that is associated with orange juice and instead of simply being handed a glass with the juice in it; is supported to get up, go to the refrigerator, open the door, take out a carton of orange juice, return to the table, get a glass from the cupboard, pour the juice into the glass and drink it. In other words, the person's participation in a typical sequence is initiated by the selection of a particular texture choice. The person has learned to expect orange juice. The heightened anticipation will help hold the individual's attention on the actions and movements that occur immediately after the presentation of the textured symbol. If the first experiences are



kept short, the person will focus on the new steps as long as the reinforcement (e.g., orange juice) is available fairly quickly. This provides additional opportunities to teach related skills, as well as increase the person's ability to tolerate some variability around the use of textured symbols.

The ability to generalize a set of behaviors to new people and places involves accepting some diversity in the timing, order and situations encountered. In the real world, people touch, move, and react differently. In the real world, a variety of circumstances will teach that a request may be honored in a slightly different manner, but still honored. The person also learns about delayed gratification while taking part in activity sequences that encourage developing additional skills. Eventually, instead of just going to the refrigerator and getting the juice to drink, the person might learn to get a can of frozen juice and join in the activity of making juice before drinking it. And later still, the texture may be used as a shopping list at the grocery store before coming home and making and drinking the requested juice. As such, the use of the textured symbol to communicate a preference leads to the opportunity to learn other behaviors (e.g., waiting, pouring, stirring, money exchange, etc.) required to participate in functional activities.

Instructional Goal 2 - Learning to Make Choices:
To teach the individual to use the textured symbols for choice-making between two items.

Assuming the person has now learned several different textures, it is now time to start offering the person a choice. (See the section titled "Teaching with Foils" at the end of this goal, if the person is still not discriminating between textures.) Perhaps several vocabulary items, each taught in isolation of the others, have been added gradually. Instructional assistance in the form of physical prompts continues to be faded and now several preferred items are offered together. The referents were

selected on the basis of parent, teacher and care-giver input regarding which items (e.g., foods, drinks) the person seemed to prefer. Since the person may not realize that more than one item is being offered, it is often necessary to establish some procedure to alert the individual that there are now two items from which to select. For example, the person might be assisted to pick up each texture separately from the table and place it on the display format used to make requests. This allows the person to systematically feel each texture as it is placed on the display board or wallet.

Following this orientation to the choices, both textured symbols as well as any foils that may be used, are offered to the person. The person then makes a selection which should be assumed to be the person's choice of a preferred item. If a foil is presented along with the two textured symbols then it should be assumed that the probability of selecting the foil will be very low. If the person picks the foil after touching the textured symbols, it may mean the person has not learned the texture/referent association. Considering this possibility is important and may require a review of all of the instructional goals starting back with Phase I.

Teaching With Foils

Foils are a tool to help shape discrimination and successful use of textures as communication symbols. For example, a textured symbol might be presented on the display format with a foil to help emphasize the difference in "feel" between the two options. Highlighting this difference is sometimes necessary to help an individual learn that each texture is unique. Until a person discriminates between textured symbols, the symbols are perceived as the same and will be used as simple "signaling" devices. Whether signaling is done by touching the texture or exchanging it, the person's understanding is associated to the behavior and not the actual textured symbol. For some individuals, progressing to true symbol use is not possible. In these cases, it is important to recognize that communication is still taking place and that a person's preference to receive something can still be honored. However, it is equally important, to recognize that the textured symbols are not being used as actual symbols or labels for individual referents.

To decide whether a foil should be introduced depends on an individual's learning characteristics, rate of progress, and the types of problems encountered. A foil is usually a similarly shaped two-dimensional symbol with a smooth surface (i.e., absence of texture) which has no associated meaning. The foil is placed beside the familiar texture to help contrast the texture. If the person picks up the foil, no reinforcement is provided. Instead, the person's communication partner either waits until the person sets the foil down and begins the requesting procedure again using the correct textured symbol; or if necessary, the person is physically assisted to put the foil down.

Observational data is helpful when a foil is introduced. Consistent avoidance of the foil and direct selection of the meaningful textured symbol is easier to establish if individual trials are recorded and compared. Once the texture is established as the symbol to use in the exchange, it is important to realize the person still

may not understand the meaning behind the texture/referent relationship. The person may simply have learned to avoid the foil--not pick the symbol. Thus another item with a distinct textured symbol may need to be introduced to help reinforce the concept of the texture/referent relationship. Foils also can help maintain searching skills as well as force the person who is still at the turn-taking stage to take any textured symbol to at least avoid the foil.

There are individuals for whom foils are inappropriate. These individuals would be confused or frustrated by the use of a symbol without an assigned referent. Perhaps the individual has additional motoric disabilities and developing a search behavior takes considerable effort. Such a person might be so frustrated from selecting a foil and receiving nothing that in only a few short tries the person's motivation to use the system at all is compromised. Another individual may be limited in the total number of texture/referent combinations learned to date (e.g., only six total). As a result, the decision to teach a meaningless symbol is not appropriate when increasing total vocabulary should be the overall goal.

There alsor are situations where a foil could help emphasize the distinct difference between textures, but the person's vocabulary includes preferences that are by-in-large equal in terms of motivation. For example, a person has six different food items, likes to eat all of the items and so continues to request all equally or on a random basis. Here, several foils might be displayed with two of the texture choices but instead of receiving nothing when the foil is picked, the assigned referent value might be instead a very low-preference item such as water. The person would then always get something for requesting, but not get any of the truly preferred items unless he can locate one of the preferred textured symbols. Often times the experience of getting something less than desired for the foil helps reinforce the value of each texture by encouraging the person to learn to tactually discriminate which are the more preferred.

Phase IV

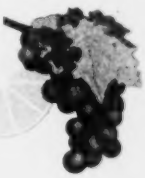
Instructional Goal 1 - Generalizing Textured Symbol Use: *To teach the individual to make requests and choices across various environments and with a variety of communication partners.*

At this point, textured symbol use will have become quite individualized. Some persons may be capable of more spontaneous use of the formats and textures and be allowed unlimited access to certain items whenever the person decides to request them. Other individuals first may need to use the textures as receptive symbols, as when the textured symbols are presented at the beginning of a grocery shopping sequence and serve as a list for the items that are to be purchased. Still other persons may have only one texture used to request "more" of a single preferred item. Whatever the case, the primary emphasis of this teaching phase is to promote the person's ability to use textured symbols to make requests or choices of different people across a variety of settings. The overall goal is to integrate the use of the symbols in as many different circumstances as possible within the person's typical daily routine, looking for fresh partners and exploring new situations.

Instructional Goal 2 - Increasing Vocabulary: *To increase the number of choices available by expanding the number of textured symbols the person can discriminate and recognize as unique.*

It cannot be determined whether a person understands that different textures represent different referent items until several textured symbols are displayed together. Then the person will likely show distinct preferences between the overall array of items offered. For example,the person always picks the texture that stands for chocolate chip cookie over the texture that

stands for grapes when the two are displayed together. And likewise, the person always selects the texture for grapes over the texture that represents white milk. Here, the various preferred items are compared in a way that establishes a preferred vocabulary hierarchy. This approach allows information to be gathered without interfering with the request function.



An additional way to gather data with some individuals can be conducted within a functional activity. For example, after being positioned between two adjacent bins of fruit (e.g., grapes and oranges), the person's hand could be guided to touch one of the textured symbols on the person's list and the person then allowed to select the food item which corresponds to the texture.

The reason people need to be able to demonstrate that they can discriminate between different textured symbols in a variety of environments, correlates to decisions to add vocabulary. If a person hasn't shown the ability to discriminate, then instruction needs to focus on teaching that skill or the person's potential to learn additional texture/ referents needs to be evaluated.

The overall number of textured symbols introduced depends on the individual. Some individuals may not be able to remember numerous texture/referent combinations. One person may be able to learn only a few distinct examples, while another individual may learn twenty to thirty textured symbols. In addition, some individuals may learn more tactile symbols (e.g., raised Blissymbols) as haptic or active touching skills develop. However, the decision to expand vocabulary or begin using tactile symbols (i.e., symbols requiring active exploration and comparison of unique details to make the identification) needs to be carefully analyzed.

When the decision to add vocabulary is made it should remain focused on individual preferences. It is important to distinguish between what care-givers, teachers, and parents might want the person to use and what the person actually considers a preference. Textured symbols work best when they represent favorite foods, activities or objects. The primary consideration throughout all teaching phases, but especially when adding new vocabulary, is to discover what is motivating. To make a true choice, individuals need to be offered at least three or more possible alternatives. The ultimate goal of developing a system of textured symbols is to broaden people's access to the experience they want in their lives. Therefore, increasing vocabulary should always be considered in light of whether it is enjoyable, preferred and/or stimulating to the person choosing it. In other words, any list of vocabulary developed for use during choice making sessions must be evaluated relative to the person's fondness for and attraction to various alternatives. The opportunity to pick from a number of items and call each one a "choice" depends on an individual's viewpoint of the offered selection.

Summary

Although teachers and caregivers may be hoping to develop a "Communication System," it is important to remember that textured symbols are an individualized set of symbols representing preferred items. The real purpose of introducing textured symbols is to teach a reliable way for a person to make requests and choices. In addition, although service providers and/or family members may want a person to develop a large, varied and complex vocabulary, the critical component of having a useful set of textured symbols rests in the opportunity to select objects, items and activities that are motivating and important to the person. Finally, while teachers

and caregivers may believe the ultimate objective of teaching communication skills is to create a communication system, the value of textured symbols must always remain on offering specific, concrete choices that interest and motivate the learner. Textured symbols are not a communication system, as much as a way to gain access to the things that help make life enjoyable.

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Appendix A:

Seven Levels of Communicative Competence

Seven Levels of Communicative Competence

Level I: Pre-intentional Behaviors
Level II: Intentional Behaviors
Level III: Unconventional Communication
Level IV: Conventional Communication
Level V: Concrete Symbols
Level VI: Abstract Symbols
Level VII: Language

From: Rowland, C. (1996). *Communication matrix: A communication skill assessment.*. Portland, OR: Washington State University at Vancouver/Portland Projects.

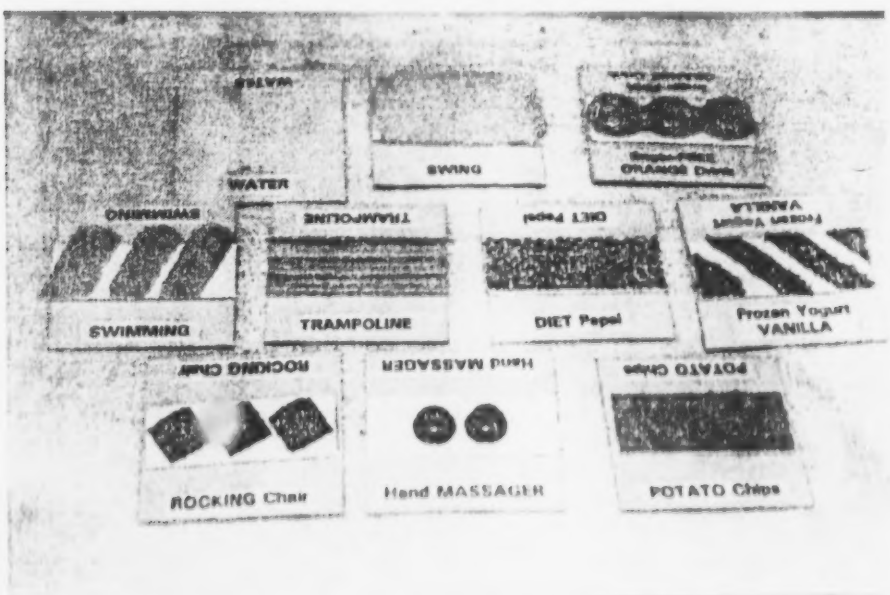
Appendix B:

Textured Materials

Textured Materials

Types of materials which have been used successfully as textured symbols include.

1. Corrugated cardboard
2. Bubblewrap
3. Sponge
4. Various grades of sandpaper
5. Rubber stair tread
6. Short-cropped soft fur
7. Dried glue dots on cardboard
8. Quilting with stitched pattern
9. Plastic netting
10. Styrofoam
11. Carpeting
12. Plastic furniture bumpers
13. Metal webbing
14. Leather
15. Foam insultaion
16. Felt
17. Burlap
18. Non-slip matting for use under rugs
19. Pipe cleaner
20. Fabric art peel and stick trimmings
21. Quick stick felt dots
22. Softouch velour sheets
23. Various types of fabric



Examples of textured materials used as symbols.

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Appendix C:

Texture Making Tools and Materials

Texture Making Tools and Materials

Tools and materials used in making textured symbols include:

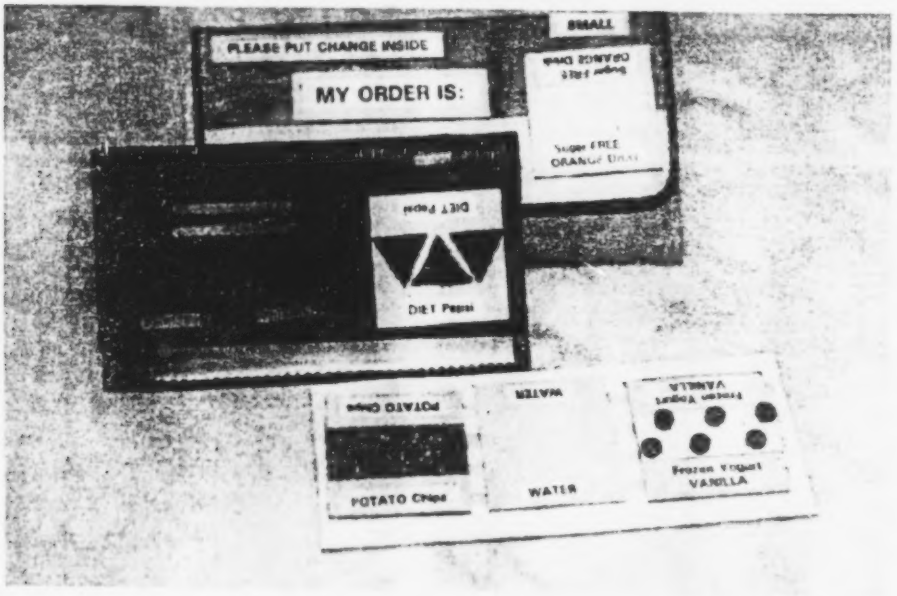
1. Elmer's glue
2. Posterboard
3. Contact cement
4. Shears
5. Velcro
6. Exact-o knife
7. Paint thinner
8. Clear acrylic spray enamel
9. Krylon crystal acrylic coating spray
10. Ruler
11. Puff paint
12. Glue stick
13. Hot glue gun
14. Pen
15. Pencil
16. Eraser

Appendix D:

Display Formats

Display Formats

There are several different types of display formats, including display boards, books, and wallets. The pictures below show some examples and their use with textured symbols.



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